

**Amendments to the Specification:**

**Please replace the paragraph beginning at page 1, line 13, with the following redlined paragraph:**

In general, conventional rain attenuation compensation methods mainly ~~uses~~ use either power control techniques or diversity techniques. In recent times, new techniques have been developed to compensate rain attenuation by using an adaptive transmission technique.

**Please replace the paragraph beginning at page 1, line 17, with the following redlined paragraph:**

The rain attenuation compensation methods using the power control techniques are disclosed in U.S. Pat. Nos. ~~4261054~~ 4,261,054 and ~~4731866~~ 4,731,866, which amplify signal powers by a degree of signal attenuation if signal attenuation occurs due to rain. But, the prior arts should include a high power amplifier for supplementing the power margin at the time when the system is designed, and thus causes economical inefficiency.

**Please replace the paragraph beginning at page 1, line 22, with the following redlined paragraph:**

Another rain attenuation compensation method using the diversity techniques requires to install additional earth station, additional frequency band or satellite according to the kinds of diversity, and therefore causes even serious economical ~~problem~~ problems.

**Please replace the paragraph beginning at page 1, line 25, with the following redlined paragraph:**

Rain attenuation compensation methods using adaptive transmission techniques are disclosed in U.S. Pat. Nos. ~~4309764, 4301533, 4837786, and 4047151~~ 4,309,764, 4,301,533, 4,837,786, and 4,047,151, that describe a method for allocating a spare time slot to either a user or earth station experiencing excessive attenuation in TDMA (Time Division Multiple Access) technique, a method for reducing data transmission rate in case of excessive attenuation, or a method for enhancing error correction capability by providing spare redundancies in a coding method. These methods mainly use a very basic and simple method for compensating rain attenuation, so that the compensation range is limited and efficiency of rain attenuation compensation is also limited. In addition, these methods do not provide a detailed method for

allocating a proper transmission method by estimating rain attenuation and then predicting attenuation at the next sampling time.

**Please replace the paragraph beginning at page 2, line 10, with the following redlined paragraph:**

Accordingly, the present invention is directed to a rain attenuation compensation method using an adaptive transmission technique and a system using the same that substantially ~~obviate~~ obviates one or more of the problems due to limitations and disadvantages of the related art.

**Please replace the paragraph beginning at page 6, line 6, with the following redlined paragraph:**

In addition, if it is determined that additional coding gain is needed because of an excessive attenuation, as to the information frame composed of  $k^2$  bits, block coding operations of  $k$ -times for  $k$  bits are sequentially performed for each row, and block coding operations of  $k$ -times for  $k$  bits are sequentially performed for each column, therefore, bits of  $(2nk-k^2)$  are transmitted. In case of decoding, an iterative decoding method using a soft decision output Viterbi algorithm is employed. In this case, there are several advantages that the same coding construction is used and only a little modification of the decoding method is needed ~~to~~ at the receiving end.

**Please replace the paragraph beginning at page 8, line 6, with the following redlined paragraph:**

Referring to Figure 5 and 6, the level of the received signal modulated by M-ary PSK method is normalized (S501). In case of a noise-free channel, M-ary PSK modulated symbol signal having a-symbol energy of 1 is shown in Figure 6.

**Please replace the paragraph beginning at page 8, line 19, with the following redlined paragraph:**

The normalization step S501 determines a normalization reference level according to a control signal indicating the modulation method of the received signal, multiplies an inverse number of the determined normalization reference level by the received signal, and thus performs a-normalization. The quantization step S502 and the histogram calculation step

S503 obtain the absolute values of either real part or imaginary part of the received symbols, quantize the absolute values in predefined levels, observe the number of symbols included in each quantization level, and thus obtain a histogram.

**Please replace the paragraph beginning at page 8, line 26, with the following redlined paragraph:**

Figure 8 shows an example of obtaining a histogram by using 16-level quantization on either real part or imaginary part of received M-ary PSK symbols, applying a square-type weight to this result, then combining the results linearly, and finally estimating the signal-to-noise (S/N) ratio. The weights are defined as the squared integer values in consideration of the complexity when it is implemented in hardware. ~~A plurality~~ Plurality of weighted values such as 0, 1, 4, and 9 et al. are symmetrically applied from the central point of quantized signal level '1'.

**Please replace the paragraph beginning at page 10, line 3, with the following redlined paragraph:**

Referring to Figure 11, a time  $t$  is initialized (S1101). A low pass filtering action is performed (S1103) for the estimated signal-to-noise (S/N) ratio values. On the basis of the variation of the filtered signal-to-noise (S/N) ratio values, a signal-to-noise (S/N) ratio at the next time point ~~is~~ are predicted (S1104). The low pass filtering (LPF) action is employed to eliminate a fast variation in the estimated signal-to-noise (S/N) ratio values, wherein the magnitude is changed at an interval shorter than a response delay time of a system. Such a LPF action is used to eliminate a high-speed variation in signal-to-noise (S/N) ratio values, but causes a delayed variation of the estimated values. Accordingly, in order to reduce a delay error caused by the low pass filter (LPF), an prediction error correction step (S1105) is performed, wherein a correction value is proportional to the average prediction error.

**Please replace the paragraph beginning at page 10, line 14, with the following redlined paragraph:**

Since the variation of signal-to-noise (S/N) ratio faster than a system response time within a smaller width is not considered in the prediction step, real signal-to-noise (S/N) ratio is deviated from the predicted value within a small range due to scintillation. At this time,

if the real signal-to-noise (S/N) ratio value is higher than the predicted value, a deterioration of service quality does not occur. However, in the opposite case that the real signal-to-noise (S/N) ratio is lower than the predicted value, a transmission method conversion proper to the real value may be not made or a transmission power may be adjusted with a magnitude smaller than a required magnitude, thereby a deterioration of service quality can occur. In order to prevent this case, a method making the predicted value lower than the real value is also needed. The present invention employs a method for adding a margin to the predicted value, wherein a fixed margin having a predetermined negative (-) magnitude is added to the predicted value and a variable margin estimated in proportion to a standard deviation of the prediction error in step S1106 is also added in step S1107.